**Tips for Solving Hardy-Weinberg Problems**

Ms. Ottolini, AP Biology, 2012-2013

**Equations**

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| ***Allele Frequencies*** | p + q = 1 | p = frequency of the dominant allele (A)  q = frequency of the recessive allele (a) |
| ***Genotype Frequencies*** | p2 + 2pq + q2 = 1 | p2 = frequency of the homozygous dominant genotype (AA)  2pq = frequency of the heterozygous genotype (Aa)  q2 = frequency of the homozygous recessive genotype (aa) |

**Ms. Ottolini’s Tips**

1. Always convert information about allele, genotype, or phenotype frequencies into decimals. These are easier to work with than fractions or percentages.
2. Convert phenotype frequencies into genotype frequencies and vice versa.

* The dominant phenotype results from both the homozygous dominant genotype (p2) and the heterozygous genotype (2pq)
* The recessive phenotype can only result from the homozygous recessive genotype (q2)

1. Convert genotype frequencies into allele frequencies.

* If you have the frequency of the homozygous dominant genotype (p2), you can take the square root of this value to find the frequency of the dominant allele (p)
* If you have the frequency of the homozygous recessive genotype (q2), you can take the square root of this value to find the frequency of the recessive allele (q)

1. Convert allele frequencies into genotype frequencies.

* Use the values for p and q in the second equation listed above (p2 + 2pq + q2 = 1)

1. Remember that you can never directly convert phenotype frequencies into allele frequencies and vice versa.